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1996 IATUL Proceedings

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Shirley Leung
University of California, Irvine

Shirley Leung, "Electronic Library Concept: Putting Plans into Practice." *Proceedings of the IATUL Conferences*. Paper 31.
<http://docs.lib.purdue.edu/iatul/1996/papers/31>

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Electronic Library Concept: Putting Plans into Practice

Leung, Shirley W.
University of California, Irvine

In the UCI Libraries

The UCI Libraries developed an electronic library framework in the Spring of 1994. We first issued a “*Statement of Vision*” followed by a letter to ourselves entitled “*The UCI Libraries in 1999: Looking to our Electronic Future*”. But 1994 was a watershed year for us in other ways.

- We took occupancy of our new science library in June 1994. This allowed us to combine three branch libraries (Biomedical, Biological Sciences, and Physical Sciences), merge four collections (those in the three branch libraries and the Engineering/Computer Science/Environmental Science materials housed in the Main Library), and integrate staff from four libraries (some of the staff from the three branch libraries and the Main Library).
- At the same time, we began planning for the Main Library Seismic Upgrade and Renovation Project. (The seismic upgrade part would require us to close the Main Library completely for three months, moving thousands of volumes out of the building, relocating half a dozen service points, and housing 90 some staff members in temporary quarters. The renovation portion of the project, which would allow limited access to collections only, would take another three months.)
- Most importantly, we implemented a new team-based organization in July, 1994 after initiating an Organizational Review and Design Project. The objective was to create a consultative, participatory organization with long-term expected outcome of “self-managed work teams with full operational responsibility.” This new organization was structured to retain an executive leadership function and a division envelope with departments and offices (~~see Table 1 and Table 2 for organization charts prior to and post July, 1994~~). The objective was to develop an organization-based enhanced ability to anticipate and adapt to change that result from staff involvement, to debate on alternative models, and to learn new skills for planning, problem solving, and living with continuous change.

In short, it was not a “*business as usual environment*,” but one that required cultural shifts in many areas.

At the Campus Level

The Campus was still grappling with a severe fiscal downturn in 1994 and clearly was not in any condition to fund special library projects. Our new chancellor, who soon made known her vision for a distinctive UCI undergraduate education, said “A UCI

graduate should be prepared to survive and prosper in the electronic information era." A campuswide task force -- Education Information Technology Task Force -- was subsequently formed to delve more intensely into this topic. It identified four key elements for making effective use of educational technology:

1. provide faculty, students, and staff with easy access to educational technology;
2. train students on how to use technology to communicate and find/manage information effectively in the electronic information environment;
3. redesign curriculum to draw on computer-based research skills;
4. integrate information technology into ongoing campus life by making all information of interest available online.

Efforts of the Task Force subsequently led to the development of the Electronic Education Environment (EEE) , an umbrella effort supported by the Office of Academic Computing, the Registrar's Office, the UCI Libraries, and other academic and administrative units. Special features of the EEE include:

- make available an e-mail account for every student -- an increase from approximately 3,000 e-mail accounts a few years ago to 14,000 by June, 1996; We will have this method of computer-assisted communication as the vehicle to facilitate exchange of information and communication.
- provide anytime, anywhere access to electronic educational resources;
- make standard productivity tools and electronic reference resources available to all students;
- provide training and support in use of electronic information resources and communication tools

Beyond the Campus

UCI is one of nine campuses of the University of California System. The nine campus libraries are inextricably tied to a variety of projects and activities, mostly related to the MELVYL System operated by the Division of Library Automation in the University of California, Office of the President. Activities at this level included:

- The TULIP Project -- a full-text electronic journal project in Materials Science with 44 Elsevier titles using bitmapped images;
- IEEE -- a full-text electronic journal project with the Institute of Electrical and Electronic Engineering;
- Implementation of Z39.50 protocol with OCLC First Search databases and RLG's Eureka databases;
- Loading additional full-text journal and A&I (abstract and indexing) databases;
- Development of a MELVYL Web Interface (prototype expected in Fall Quarter, 1996);
- Test project with Johns Hopkins U. of Press Project Muse
- Position the campus to take-advantage of future development in electronic publications as they become available via scholarly societies and commercial publisher partnerships.

Of course, we have also been heavily impacted by developments beyond the campus and the systemwide level such as the explosion of materials published in CD-ROM format, major activities in electronic publishing related to government information, and most significantly, developments related to the Internet. The latter has had a revolutionary impact on all sectors of the information community. We were just ready to put information resources on Gopher in 1993 when Mosaic came into vogue in 1994, followed by Netscape in 1995, and the rest is history.

Framework for an Electronic Library

Our Statement of Vision for an Electronic Library is quite straightforward. It simply states:

“In your electronic future, the Libraries, in partnership with the campus, will radically improve their electronic services to promote and support excellence in teaching and research at UCI. The Libraries will continue their commitment to provide electronic access to an ever increasing array of resources and services available to you in the Libraries, and through the Campus network and the Internet. The Libraries’ role and continued presence as a physical, cultural, and service institution will expand as we exploit our ability to provide and enhance your access to and management of the world of electronic information.”

In order to anchor our vision to realistic and accomplishable goals and objectives, we composed a “Letter to Ourselves” (~~Appendix 1~~) which:

- (1) re-emphasizes the library as a service organization;
- (2) re-asserts the notion of the library as a physical place; and
- (3) stakes a claim for the Libraries as a study center and as an interactive computing facility on campus.

Other key areas addressed included: infrastructure issues; functional and service concerns (collections, research and instruction, bibliographic access, and technical processing); electronic communication with faculty, staff, and students; partnership efforts with the Office of Academic Computing and academic departments; and human resource preparedness and readiness.

What Have We Accomplished After Two Years?

In addition to devoting a Herculean amount of attention and energy on building projects and organizational concerns, we have made a number of visible accomplishments in the Electronic Library domain:

- We have developed a very active Web Home Page program with information for public and staff use;
- We use the Internet extensively to carry out our work internally and externally for information exchange;
- We use FTP capabilities routinely to facilitate a variety of technical processing functions;
- We converted 300,000+ bibliographic records of U. S. government publications into machine-readable format;
- We have developed a multi-tasking cataloger’s workstation that accesses online public catalogs, bibliographic utilities, the MELVYL System, and

various cataloging tools such as the Library of Congress Catalogers' Desktop and Classification Plus programs.

- We have implemented the majority of the INNOPAC Systems' new features into our own system (i.e. ANTPAC) to enhance operations and user services (e.g. e-mail notification of overdues, holds, and recalls: user can directly place holds, recalls, and make renewals);
- We are currently testing the Electronic Reserve module offered by the INNOPAC System;
- We have implemented enterprisewide computing which serves as our infrastructural support system;
- We have established a state-of-the art computing facility equipped with 50 microcomputers (a mix of PCs and MACs), thus allowing us to play a leadership role in the EEE; (we are planning to have the same capabilities in the renovated Main Library and our Medical Center Library);
- We have made significant collaborative efforts with campus units beyond traditional working partners, including serving as the initiator of an innovative project to place microcomputers in the Student Center for open, public use.

Among our accomplishments, I would like to say a bit more about our robust enterprise-wide computing environment, a project accomplished with assistance from our Office of Academic Computing (~~see Table 3 and Table 4~~). It supports a wide-area network that hosts more than 150 PCs located in three geographically separated facilities (Main Library, Science Library, and the Medical Center Library which is 14 miles away from the General Campus. Some features are:

- It is based on network protocol supported by the campus (IP);
- It offers a uniform desktop environment;
- It is desk-top centric, with all applications reside on and run from desktop;
- It allows file-sharing for defined work groups;
- It runs networked printing services from the server
- It provides a central file storage (on server) which is backed up daily;
- It distributes updates to application software from the server

Approaches and Techniques Used in Implementing the Electronic Library in the Team-Based Environment

In the team-based environment, division and department heads take on the role of coaches and facilitators, thus moving from a top-down decision-making to a bottom-up action-oriented process. Teams are empowered to get things done instead of merely making recommendations. Operational decisions are pushed to the working level to be acted on by the team members. In implementing the electronic library in the team-based environment, we used a combination of approaches and techniques:

- Tied planning effort to the library's annual planning and resource allocation process by always keeping "electronic library" in sight;
- Provided special funding incentives to jump-start and "grow" electronic library projects;
- Use teams extensively to implement electronic projects;

- Encourage volunteerism and self-selection when forming teams -- getting everyone involved, not just the “proven” or the stars with the goal of raising the whole organization’s level of skills and interest.
- Fine-tune by clarifying roles/responsibilities;
- Established a distributed support structure by assigning a Systems “key contact” in departments and units to facilitate communication and problem solving between the Systems Department and other library units;
- Provide programmer staffing support to service units to maintain strong public service focus;
- Inculcate a “systems” rather than a Systems Department culture; vDevelop a learning organization to sustain an active learning environment.

We invested considerable time, energy, and resources on a team skills training program. Between August, 1994 and May, 1996, we had 49 days of training and 80 sessions. Topics covered included: team concepts and team building, team leader training, conflict management, meeting management, learning organization, project management, process improvements, and facilitators training. These sessions have been absolutely invaluable in the context of accomplishing our organizational and our electronic library goals.

Some Observations Based on Experience

Based on our effort to develop an electronic library and the approach and techniques we used in our team-based organization, I would like to share with you some observations on our experience.

- Teams work well for projects, but not so well for operations that require continuity and/or consistent attention.
- It is easy for a team to start projects, but ongoing maintenance effort is far less certain and more difficult.
- In addition to bringing librarians and support staff together, the team-based organization allows the discovery of new talents and abilities;
- The inclusiveness of forming teams through volunteerism and self-selection results in a long learning curve, raising issues about the benefits and value of expertise and experience;
- Because so many people are involved In the team-based environment , effective communication becomes critical to keep everyone informed in order to avoid duplicative effort and an inward-looking culture;
- Need for coordination takes on special significance, but how much and through what means will always be important questions;
- Good coordination requires effective and orderly planning. How best to take advantage of special opportunities that knock on the door but are not clearly in alignment with articulated annual goals and objectives is an issue to be sensitive about.
- There is role ambiguity in a team-based organization when administrators and managers are function as facilitators and coaches. How much should one step back and let a team work out the wrinkles and learn from its mistakes when the manager sees shortcuts and solutions.

- The commitment to stimulate creativity and sustain an exploring organization culture raises the question of how can we afford, with shrinking resources, to try new ideas and discard them if they don't work?
- The speed of information technology is changing too fast for us to keep up AND to continue maintain "quality services" in the same mode we have operated for a long time. How best to encourage the teams to examine and discontinue some current practices or service programs in order to reallocate staffing resources to try new initiatives? What happens when a team wishes to discontinue a service that is deemed important by our users?

Efforts to address the above issues are ongoing, though we have also made some modifying efforts to clarify the different levels and sets of responsibilities as we gained experience. We have developed, what I described as a taxonomy of responsibilities (see Table 5). In my assessment, I think we have moved from an essentially text-book, theoretical version of team-based organization to a more practical model of managed team-based organization. To conclude my presentation, I have three questions for further thinking/discussion:

1. How does an organization encourage and develop a thriving, creative, distributed computing culture and maintain a coordinated and resources-efficient computing environment?
2. Given the speed of advancement in information technology, would the development of an electronic library be better served by taking an evolutionary approach or a revolutionary approach. How does one strike a balance?
3. How can we best balance the development of an electronic library program with strong planning and coordination components while still retaining the ability to take advantage of spur-of-the-moment opportunities?

Acronyms:

A & I - Abstract and Indexing
 ANTPAC - Anteaters Public Access Catalog
 CD-ROM - Compact Disk Read Only Memory
 EEE - Electronic Education Environment
 IEEE - Institute of Electrical and Electronic Engineering
 INNOPAC - Innovative Interfaces Online Public Access Catalog
 IP - Internet Protocol
 Mac - Macintosh
 OCLC - Online Computer Library Center
 PC - Personal Computer
 UCI - University of California, Irvine